

**PUBLICATIONS cont.:**

**II. Public Finance**

- "The Evaluation of Results from Truncated Samples," with D. Wise, Annals of Economic and Social Measurement, April 1976.
- "Discontinuous Budget Constraints and Estimation: The Demand for Housing," with D. Wise, J.F. Kennedy School Working Paper, July 1977; Review of Economic Studies, 1980.
- "The Effect of Taxation on Labor Supply: Evaluating the Gary Negative Income Tax Experiment," with G. Burtless, October 1977; Journal of Political Economy, December 1978.
- "AFDC Participation -- Permanent or Transitory?," delivered at NBER-NSF Conference, August 1978; in Papers from the European Econometrics Meetings, ed. E. Charatsis, North Holland: 1981.
- "The Effect of Wages, Taxes, and Fixed Costs on Women's Labor Force Participation," March 1979; presented at SSRC-NBER Conference on Taxation, Cambridge, England: June 1979; Journal of Public Economics, October 1980.
- "The Effect of Taxes on Labor Supply," presented at Brookings Conference, October 1979; published in How Taxes Affect Economic Behavior, ed. H. Aaron and J. Pechman, Brookings: 1981.
- "Income and Payroll Tax Policy and Labor Supply," presented at St. Louis Fed. conference, October 1980; in The Supply Side Effects of Economic Policy, ed. G. Burtless, St. Louis: 1981.
- "Individual Retirement Decisions Under an Employer-Provided Pension Plan and Social Security," with G. Burtless, Journal of Public Economics, 1982.
- "Individual Retirement and Savings Decisions," with P. Diamond, October 1981; presented at SSRC-NBER Conference on Public Economics, Oxford: June 1982; Journal of Public Economics, 1984.
- "Retirement and Unemployment Behavior of Older Men," with P. Diamond, presented at Brookings Conference on the Aged, November 1982; in H. Aaron and G. Burtless, Retirement and Economic Behavior, Brookings: 1984.
- "Tax Policy and Unemployment Insurance Effects on Labor Supply," May 1983; in Removing Obstacles to Economic Growth, ed. M. Wachter, 1984.
- "Family Labor Supply with Taxes," with P. Ruud, American Economic Review, 1984.
- "Social Security, Health Status and Retirement," with D. Wise, in Pensions, Labor, and Individual Choice, ed. D. Wise, 1985.
- "The Effect of Taxes on Labor Supply," January 1983; in Handbook on Public Economics, ed. A. Auerbach and M. Feldstein, 1985.
- "Choice Under Uncertainty: The Decision to Apply for Disability Insurance," with J. Halpern, Journal of Public Economics, 1986.

**PUBLICATIONS cont.:**

- "Household Behavior and the Tax Reform Act of 1986," with J. Poterba, October 1986; Journal of Economic Perspectives, 1987, also published in French in Annales D'Economie et de Statistique, 1988.
- "Involuntary Early Retirement and Consumption," with L. Paquette, ed. G. Burtless, Economics of Health and Aging, 1987.
- "Income Taxation and Social Insurance in China," in Sino-U.S. Scholars on Hot Issues in China's Economy, 1990.
- "On Contingent Valuation Measurement of Nonuse Values," with P. Diamond, in Contingent Valuation: A Critical Appraisal, ed. J. Hausman, 1993.
- "Does Contingent Valuation Measure Preferences? Experimental Evidence," with P. Diamond, G. Leonard, M. Denning, in Contingent Valuation: A Critical Appraisal, ed. J. Hausman, 1993.
- "Contingent Valuation: Is Some Number Better than No Number?" with P. Diamond, December 1993, Journal of Economic Perspectives, 8, 1994.

**III. Applied Micro Models**

- "Project Independence Report: A Review of U.S. Energy Needs up to 1985," Bell Journal of Economics, Autumn 1975.
- "Individual Discount Rates and the Purchase and Utilization of Energy Using Durables," MIT Energy Laboratory Working Paper, January 1978; Bell Journal of Economics, Spring 1979.
- "Voluntary Participation in the Arizona Time of Day Electricity Experiment," with D. Aigner, May 1978; delivered at EPRI Conference on Time of Day Pricing, June 1978; in EPRI Report, Modeling and Analysis of Electricity Demand by Time of Day, 1979; Bell Journal of Economics, 1980.
- "A Two-level Electricity Demand Model: Evaluation of the Connecticut Time-of-Day Pricing Test," delivered at EPRI Conference on Time of Day Pricing; with D. McFadden, in EPRI Report, Modeling and Analysis of Electricity Demand by Time of Day, 1979; Journal of Econometrics, 1979.
- "Assessing the Potential Demand for Electric Cars," with S. Beggs and S. Cardell, presented at EPRI Conference, November 1979; Journal of Econometrics, 1981.
- "Assessment and Validation of Energy Models," presented at EIA-NBS conference on Energy Models, May 1980; in Validation and Assessment of Energy Models, ed. S. Gass, Washington: Department of Commerce, 1981.
- "Exact Consumer Surplus and Deadweight Loss," working paper 1979, American Economic Review, 71, 1981.
- "Appliance Purchase and Usage Adaptation to a Permanent Time of Day Electricity Rate Schedule," with J. Trimble, August 1983; Journal of Econometrics, 1984.

**PUBLICATIONS cont.:**

- "Evaluating the Costs and Benefits of Appliance Efficiency Standards," with P. Joskow, MIT Energy Lab Working Paper, MIT-EL82005WP; American Economic Review, 72, 1982.
- "Information Costs, Competition and Collective Ratemaking in the Motor Carrier Industry," presented at Conference On Consensual Decision Making, American University, August 1982; American University Law Review, 1983.
- "An Overview of IFFS," presented at EIA-NBS Conference on Energy Models, August 1982; in Intermediate Future Forecasting System, ed. S. Gass et al., Washington: 1983.
- "Choice of Conservation Actions in the AHS," November 1982; in Energy Simulation Models, ed. R. Crow, 1983.
- "Patents and R&D: Searching for a Lag Structure," with B. Hall and Z. Griliches, in Actes du Colloque Econometrie de la Recherche, Paris: 1983.
- "The Demand for Optional Local Measured Telephone Service," in Adjusting to Regulatory, Pricing and Marketing Realities, East Lansing: 1983.
- "Patents and R&D: Is There a Lag?," with B. Hall and Z. Griliches, 1985; International Economic Review, 1986.
- "Price Discrimination and Patent Policy," with J. MacKie-Mason, Rand Journal of Economics, 1988.
- "Residential End-Use Load Shape Estimation from Whole-House Metered Data," IEEE Transactions on Power Systems, 1988 (with I. Schick, P. Vsoro, and M. Ruane).
- "Competition in Telecommunications for Large Users in New York," with H. Ware and T. Tardiff, Telecommunications in a Competitive Environment, 1989.
- "Innovation and International Trade Policy," Oxford Review of Economic Policy, 1988 (with J. MacKie-Mason).
- "The Evolution of the Central Office Switch Industry," with W. E. Kohlberg, 1987; in ed. S. Bradley and J. Hausman, Future Competition in Telecommunications, 1989.
- "Future Competition in Telecommunications," 1987; ed. S. Bradley and J. Hausman, Future Competition in Telecommunications, 1989.
- "Joint Ventures, Strategic Alliances and Collaboration in Telecommunications," presented at International Conference on Joint Ventures in Telecommunications, October 1989, Regulation, 1991.
- "An Ordered Probit Model of Intra-day Securities Trading," with A. Lo and C. MacKinlay, Journal of Financial Economics, 1992.
- "A Proposed Method for Analyzing Competition Among Differentiated Products," with G. Leonard and J.D. Zona, Antitrust Law Journal, 60, 1992.

**PUBLICATIONS cont.:**

- "A Utility-Consistent Combined Discrete Choice and Count Data Model: Assessing Recreational Use Losses Due to Natural Resource Damage," with G. Leonard and D. McFadden, October 1992, Journal of Public Economics, 56, 1995.
- "Global Competition and Telecommunications," in Bradley, et al., ed., Globalization, Technology and Competition, 1993.
- "The Bell Operating Companies and AT&T Venture Abroad and British Telecom and Others Come to the US," presented at Harvard Business Conference on International Telecommunications, 1991, in Bradley, et al., ed., Globalization, Technology and Competition, 1993.
- "The Effects of the Breakup of AT&T on Telephone Penetration in the US," with T. Tardiff and A. Belinfante, American Economic Review, 1993.
- "Competitive Analysis with Differentiated Products," with G. Leonard and D. Zona, Annales, D'Economie et de Statistique, 34, 1994.
- "Proliferation of Networks in Telecommunications," ed. D. Alexander and W. Sichel, Networks, Infrastructure, and the New Task for Regulation, University of Michigan Press, forthcoming 1995.
- "The Effect of Superstars in the NBA: Economic Value and Policy," with G. Leonard, mimeo May 1994.
- "Valuation of New Goods Under Perfect and Imperfect Competition," MIT Working Paper, June, 1994.
- "Cellular Telephone: Competition and Regulation," mimeo, November 1994.
- "Competition in Long Distance and Equipment Markets: Effects of the MFJ," 1994, forthcoming in Journal of Managerial and Decision Economics, 1995.
- "The Cost of Cellular Telephone Regulation," mimeo, 1995.
- "Efficient Local Exchange Competition," with T. Tardiff, forthcoming in Antitrust Bulletin, 1995.

**JOINT REPORTS, TESTIMONY, AND BOOKS:**

- "Project Independence: An Economic Analysis," Technology Review, May 1974.
- "The FEA's Project Independence Report: Testimony before Joint Economic Committee," U.S. Congress, March 18, 1975.
- "The FEA's Project Independence Report: An Analytical Assessment and Evaluation," NSF Report, June 1975.
- "Energy Demand in the ERDA Plan," with D. Wood, Energy Laboratory Report, August 1975.

**JOINT REPORTS, TESTIMONY, AND BOOKS cont.:**

- "A Note on Computational Simplifications and Extensions of the Conditional Probit Model," EPRI report on choice models, September 1977.
- "Labor Supply Response of Males to a Negative Income Tax," Testimony for U.S. Senate Finance Subcommittee on Public Assistance, November 22, 1978.
- "Appliance Choice with Time of Day Pricing," Energy Laboratory Report, January 1980.
- "Discrete Choice Models with Uncertain Attributes," Oak Ridge National Laboratories Report, January 1980.
- "Individual Savings Behavior," with P. Diamond, Report to the National Commission on Social Security, May 1980.
- "Wealth Accumulation and Retirement," with P. Diamond, Report to the Department of Labor, May 1982.  
"A Review of IFFS," Report to the Energy Information Agency, February 1982.
- "A Model of Heating System and Appliance Choice," with J. Berkovec and J. Rust, December 1983.
- "Labor Force Behavior of Older Men After Involuntary Job Loss," with L. Paquette, Report to Department of Health and Human Services, December 1985.
- "Pollution and Work Days Lost," with D. Wise and B. Ostrow, NBER Working Paper, January 1984; Revised 1985.
- "Demand for Interstate Long Distance Telephone Service," with A. Jafee and T. Tardiff, November 1985.
- "Competition in the Information Market 1990", August 1990.
- The Choice and Utilization of Energy Using Durables, ed. J. Hausman, Palo Alto: EPRI, 1981.
- Social Experimentation, ed. J. Hausman and D. Wise, Chicago: 1985.
- Future Competition in Telecommunications, ed. S. Bradley and J. Hausman, Harvard: 1989.
- Contingent Valuation: A Critical Appraisal, ed. J. Hausman, North Holland, 1993.
- Globalization, Technology and Competition, ed. S. Bradley, J. Hausman, R. Nolan, Harvard 1993.
- "The Welfare Cost to the US Economy of Regulatory Restriction in Telecommunications," January 1995.
- Economic Impact of Deregulating U.S. Communications Industries, The WEFA Group, Burlington, MA, February 1995.

**COMMONWEALTH OF MASSACHUSETTS**  
**DEPARTMENT OF PUBLIC UTILITIES**

**REBUTTAL TESTIMONY OF**  
**JERRY A. HAUSMAN**

**ON BEHALF OF**  
**CELLULAR ONE**

**D.P.U. 94-185**

**August 23, 1995**

1 My name is Jerry A. Hausman. I am the MacDonald Professor of  
2 Economics at the Massachusetts Institute of Technology in Cambridge,  
3 Massachusetts 02139.

4 My qualifications, professional experience and curriculum vitae are  
5 contained in my direct testimony filed in this proceeding and marked as Exhibit  
6 CEL-1.

7 The purpose of my rebuttal testimony is to address certain of the issues  
8 raised by the direct testimony of the parties in this proceeding.

9  
10 I. Network Interconnection and Compensation Arrangements

11 A. NYNEX's Qualifying Standards for Mutual Compensation

12 In this proceeding, New England Telephone and Telegraph Company  
13 ("NYNEX") supports the concept of interconnection of carrier networks and access  
14 compensation between interconnecting carriers. However, NYNEX has proposed  
15 an overly restrictive definition of which interconnecting carriers would qualify for  
16 access, or mutual, compensation for the exchange of traffic with NYNEX. In the  
17 testimony of Paul J. Calabro, NYNEX proposes that only competitive local  
18 exchange carriers that provide service in a large service territory and serve a  
19 percentage of both residence and Lifeline customers comparable to the  
20 percentage of such customers that NYNEX serves would be eligible for mutual

1 compensation, or "access compensation," the term used by Mr. Calabro.  
2 According to NYNEX's proposal, carriers would be required to report frequently  
3 to the Department their number and type of customers. Carriers without service  
4 characteristics comparable to NYNEX's would not be allowed to recover  
5 compensation for providing access to and terminating traffic on their networks.  
6 Calabro Direct Testimony, pp. 54-56.

7 In my opinion, such a proposal creates improper economic incentives which  
8 would prevent competition from developing in the local exchange market in  
9 Massachusetts. I would expect that only a very few, if any, carriers would meet  
10 the standards proposed by NYNEX. Furthermore, specialized competitors, who  
11 can be important to the competitive process, could be prevented from entering the  
12 market. I do not recommend that the Department adopt the qualifying  
13 standards proposed by NYNEX.

14 Instead, in its order in this proceeding, the Department should require  
15 NYNEX to provide network interconnections to the facilities of other carriers at  
16 any technically feasible location. In addition, the Department should require  
17 NYNEX, and other local exchange carriers, to provide compensation for the  
18 termination of calls on another carrier's facilities, including the facilities of  
19 cellular carriers. The compensation should be based on the type of  
20 interconnection used so that the local exchange and other carriers receive correct  
21 economic incentives to choose the forms of interconnection which are



1 economically efficient. Mutual compensation between carriers should not be  
2 denied on the basis of the type of interconnection between carriers.

3 H.R. 1555, passed in the U.S. House of Representatives on August 4, 1995,  
4 provides that interconnection between facilities-based carriers should occur at  
5 any technically feasible point on just and reasonable terms which provide for the  
6 mutual and reciprocal recovery by each carrier of the costs associated with the  
7 termination on such carrier's network facilities of calls that originate on the  
8 network facilities of another carrier. The legislation also provides that  
9 compensation should be based on a reasonable approximation of the additional  
10 costs of terminating such calls and the prices for termination that would prevail  
11 in a competitive market.

12 As I described in my previous testimony before the Department, Cellular  
13 One currently interconnects and exchanges traffic with NYNEX using two basic  
14 types of interconnection --- a Type I interconnection, which is a connection to a  
15 NYNEX end office, and a Type II interconnection, which is a connection to a  
16 NYNEX tandem switch. Transcript, Vol. 7, pp. 164-165. Tandem switches  
17 represent an added level of switching capability and are generally used to  
18 aggregate landline traffic such as long distance traffic. In many cases, cellular  
19 traffic need not be sent to tandem switches because cellular traffic is already  
20 aggregated at the cellular switch (the Mobile Telephone Switching Office or  
21 "MTSO"). Most of Cellular One's connections with NYNEX are over Type I  
22 interconnections.

1       The use of Type I interconnections allows Cellular One to design its system  
2   most efficiently from an engineering and economic standpoint and provide wide  
3   area toll-free calling scopes for its customers. Customers express a high degree of  
4   preference for such wide calling scopes, and Cellular One has designed its system  
5   to satisfy that customer demand. Indeed, my previous research into the cellular  
6   industry has demonstrated that the ability of cellular carriers to choose their  
7   type of interconnection with the landline network and increase calling scopes  
8   (where permitted by the MJF) have been important competitive strategies used  
9   by cellular companies to attract new customers. Restrictions on the ability of a  
10   cellular company to choose the most efficient means of interconnection would  
11   lead to decreased calling scopes, decreased cellular competition and harm to  
12   cellular customers.

13       NYNEX has taken the position concerning interconnection and mutual  
14   compensation with Cellular One that it will only consider mutual compensation  
15   for the exchange of traffic with Cellular One over Type II interconnections, and  
16   that it will not provide mutual compensation for Type I interconnections. No  
17   reasonable economic or engineering basis exists for such an exclusion, and  
18   Cellular One should not be forced to confront improper economic incentives  
19   because of restrictions imposed by NYNEX based on the type of interconnection.  
20   Otherwise, economic inefficiency will result.

21       The exchange of traffic between NYNEX and Cellular One, and  
22   compensation for that traffic exchange, should occur at NYNEX's end offices,

1 tandems or any other technically feasible locations. NYNEX's refusal to consider  
2 mutual compensation for Type I interconnections effectively limits Cellular One  
3 to exchanging traffic with NYNEX only at NYNEX's tandems. If NYNEX pays  
4 mutual compensation only to carriers that connect at NYNEX tandems, the  
5 network options that competing carriers can design and offer to their customers  
6 will be restricted unnecessarily. The network structure of competing carriers will  
7 be forced to resemble NYNEX's network structure due to the location of NYNEX  
8 tandems and the requirement to interconnect at those tandems in order to  
9 receive compensation for terminating traffic originating with NYNEX.

10 This restriction imposed by NYNEX which reduces the economic incentive  
11 to use Type I interconnections could effectively eliminate the wide area calling  
12 scopes that are currently enjoyed by Cellular One customers as well as the  
13 successful competitive strategies that have utilized those calling scopes. It would  
14 also inhibit the ability of other carriers to offer innovative network options to  
15 compete with NYNEX.

16 It is my understanding that NYNEX has also taken the position that  
17 carriers which connect with NYNEX by a Type I interconnection will be treated  
18 by NYNEX as large end users, or customers, and, therefore, will not be entitled to  
19 mutual, or access, compensation. This position will create economic inefficiency  
20 and will limit competition. Cellular One offers service to the public and  
21 maintains sophisticated switching and transport facilities. It is not an end user,  
22 but, rather is a facilities-based carrier that should be entitled to mutual

1 compensation where it exchanges traffic with NYNEX. Cellular One's use of  
2 Type I interconnections with NYNEX does not alter its status as a facilities-  
3 based carrier.

4 B. MCI's Proposal for Mutual Traffic Exchange

5 In the testimony of Dr. Nina W. Cornell, MCI Telecommunications  
6 Corporation ("MCI") proposes that the exchange of traffic between NYNEX and  
7 interconnected competitive local carriers be based on the principal of mutual  
8 traffic exchange, also known as "bill and keep." In my opinion, the Department  
9 should not order the implementation of mutual traffic exchange between NYNEX  
10 and competitive carriers.

11 According to Dr. Cornell's proposal for mutual traffic exchange,  
12 interconnecting carriers would pay "in kind" rather than in cash for terminating  
13 traffic originated by customers of the other carrier. Cornell Direct Testimony,  
14 p. 37. This proposal is essentially a noneconomic approach to the issue of the  
15 appropriate charges for interconnection between carriers. If adopted, it would  
16 have at least two harmful economic consequences:

- 17 • The economic costs of interconnecting with the networks of other  
18 carriers would not be reflected in a price for interconnection. As a  
19 result, interconnecting carriers would make decisions as to the method  
20 and location of interconnection based in part on non-cost factors. This  
21 outcome would lead to inefficient interconnections.

- New entrants, such as MCImetro ATS, and other competitive carriers, would be permitted to free ride off the investments made in existing networks by companies such as Cellular One and NYNEX. This free riding will create disincentives for network investment by competitive carriers, and consequently the telecommunications networks that develop in Massachusetts may not be as efficient and modern as the networks that would develop if mutual traffic exchange were not adopted.

(1) Mutual Traffic Exchange and Economic Efficiency

The interconnection of telecommunication networks and resulting termination of traffic on one carrier's network originating from another carrier's network imposes costs on the terminating carrier's network. In my direct testimony in this proceeding, I indicated that a terminating carrier should be compensated for the costs it incurs in terminating traffic on its network, and the originating carrier should bear the cost its traffic imposes on the terminating carrier. Cost-based prices and the price signals they represent are necessary to enable buyers and sellers, or in this case, interconnecting carriers, to make economically efficient interconnection decisions that will produce the overall least cost interconnection arrangements. These principals are basic and should not be controversial. They have been widely recognized by economists and have been adopted by the Department on numerous occasions.

1 Dr. Cornell, however, ignores these principles and proposes a system of  
2 interconnection whereby there are no price signals as to the costs that  
3 interconnection imposes on terminating carriers' networks. Without proper price  
4 signals, competitive carriers will not make economically efficient interconnection  
5 investment decisions. Instead, competitive carriers will attempt to use existing  
6 networks to minimize their own interconnection costs while disregarding the  
7 costs they will be imposing on the existing networks that terminate their traffic.

8 Economic systems based on no, or inadequate, prices for the acquisition of  
9 the inputs of production, such as advocated by Dr. Cornell, have been found to  
10 create large amounts of economic inefficiency. For instance, in the former Soviet  
11 Union, there was insufficient economic incentive to economize on the use of oil,  
12 an important input to industrial processes, because oil did not have an  
13 appropriate economic price. Much oil was wasted, and the Soviet oil industry did  
14 not have sufficient revenue to invest in oil production. The result was the  
15 precipitous decline of the Soviet oil industry. Only recently, with massive  
16 U.S. investment, has the Soviet oil industry begun to recover.

17 In support of her proposal that compensation for the exchange of traffic be  
18 "in kind" rather than in cash, Dr. Cornell states that interconnection traffic  
19 between competing carrier networks will tend to be in balance over time. Cornell  
20 Direct Testimony, pp. 15, 41. For most competitive carriers, including Cellular  
21 One, the minutes of terminating and originating traffic with NYNEX are  
22 nowhere near in balance now, and I see no economic reason to expect that traffic

1 between carriers will balance out in the future. Nor do I expect the incremental  
2 costs of interconnection to be similar for NYNEX and competing carriers. As  
3 more competition develops in the local exchange and intraLATA markets, niche  
4 markets will develop to be served by niche competitors, and I do not believe that  
5 there is a sound basis to conclude that traffic between these providers will be in  
6 balance.

7 Cellular One's interconnection arrangements with NYNEX provide an  
8 example as to why interconnection charges should be cost-based and why Dr.  
9 Cornell's approach would lead to inefficient network interconnections. Cellular  
10 One uses Type I interconnections for the majority of its traffic exchanged with  
11 NYNEX. In most cases, Cellular One's choice of the Type I interconnection  
12 results in more efficient interconnections with NYNEX than would occur with  
13 Type II interconnections and allows Cellular One to offer large toll-free calling  
14 areas to customers. A Type I interconnection also avoids the use of the NYNEX  
15 tandem switches.

16 If Cellular One did not have to pay NYNEX for interconnection, as  
17 suggested by Dr. Cornell, Cellular One could disregard the cost to NYNEX of  
18 interconnection, and could choose the method and location of interconnection  
19 which created the lowest costs for Cellular One. This could then create higher  
20 costs for NYNEX and higher overall costs for both networks. The result would be  
21 economically inefficient and would represent a waste of society's resources.

1           If NYNEX, under Dr. Cornell's proposal, were not permitted to charge  
2   Cellular One for interconnection, NYNEX might well decide to offer only a single  
3   type of interconnection that resulted in the lowest overall costs to NYNEX, but  
4   higher costs to Cellular One and overall higher combined interconnection costs.  
5   Furthermore, if NYNEX decided to offer only Type II interconnections, Cellular  
6   One would no longer have a choice of the type of interconnection which is best  
7   from a cost and competitive basis. This approach might restrict the ability of  
8   Cellular One to design its system to meet customer demand and could lead to a  
9   decrease in the variety of service offerings available to cellular customers.

10          A variation of Dr. Cornell's proposal that would use "bill and keep" for most  
11   of the traffic exchanged and only provide for payments for imbalances in  
12   interconnection traffic creates the same type of economic problems. Under this  
13   variation, if it is assumed that 90% of the traffic balanced out, but only 10% of  
14   the traffic was not in balance and, therefore, subject to compensation, it is  
15   unlikely that the 10% of the traffic not in balance would be a sufficiently large  
16   amount to induce NYNEX to offer both types of interconnection. Instead,  
17   NYNEX could well decide to choose its least cost method of providing  
18   interconnection to Cellular One without taking any account of Cellular One's  
19   costs. Even with this variation of Dr. Cornell's proposal, incorrect economic  
20   signals (prices) would exist and economic inefficiency could well be the result.

21          These examples demonstrate why prices are necessary to ensure an  
22   economically efficient allocation of economic resources. Cellular One (and other



1 service providers) should be able to choose the most efficient form of  
2 interconnection based on correct prices, consumer demand, and competitive  
3 conditions.

4 (2) Free Riding

5 Dr. Cornell's proposal for mutual traffic exchange will also create  
6 freeriding incentives for new entrants. Companies that have constructed  
7 networks can only recover their investments if they are paid prices for the use of  
8 their networks which reflect the economic costs associated with that usage.  
9 However, Dr. Cornell's proposal ignores the costs of network usage. Instead, it  
10 creates an incentive for a new entrant that has not constructed a network to  
11 minimize its network costs and take advantage of existing networks while not  
12 paying for such network usage. A proposal such as this that does not reflect all  
13 economic costs will result in market failure. This is known as the externality  
14 problem in economics and is one of the most important causes of market failure.  
15 If the interconnection policy adopted by the Department does not allow  
16 companies to recover the costs they incur in terminating traffic, they will not  
17 make the necessary investment in network facilities. Similarly, companies that  
18 are allowed a free ride on existing networks also will not receive the necessary  
19 incentives to make investments in network construction. Thus, the phenomenon  
20 of free riding leads to decreased investment and will ultimately result in a less  
21 efficient telecommunications network and less choice for consumers.

1       As new competitors enter the telecommunications market and the costs of  
2     providing telecommunications services vary greatly between interconnecting  
3     networks with technological and other changes, it is imperative that  
4     interconnection rates reflect economic costs. A system such as that proposed by  
5     Dr. Cornell which has no price signals and price incentives is ill-suited to the  
6     rapid changes which will occur in the telecommunications marketplace and will  
7     not result in the construction of the most economically efficient  
8     telecommunications network in Massachusetts.

9       Decreased investment in telecommunication networks will cause less choice  
10    for consumers and decreased economic welfare. Free riding inevitably has this  
11    outcome. New entrants, such as MCImetro, should pay their economic costs so  
12    that market failure does not occur. Markets work properly when prices reflect  
13    economic costs. The Department should attempt to design interconnection  
14    arrangements in Massachusetts so that prices and costs lead to economic efficient  
15    outcomes.

16

17    II.   IntraLATA Toll Presubscription

18       A number of parties to this proceeding support requiring intraLATA  
19    presubscription. Direct Testimony of Joseph Dunbar on behalf of MCI; Direct  
20    Testimony of William D. Salvatore on behalf of AT&T Communications of New

1 England, Inc. In my opinion, it is not appropriate to apply intraLATA toll  
2 presubscription requirements to cellular carriers.<sup>1</sup>

3 There is already substantial cellular competition, and with the advent of at  
4 least 3, and perhaps as many as 6, new personal communications services  
5 ("PCS") providers, mobile competition will increase. Presubscription would  
6 hinder the flexibility of cellular carriers to offer services to the public and would  
7 decrease competition. For example, wide area calling plans for cellular  
8 customers that do not adhere to LATA boundaries, e.g. the "City of Florida" plan  
9 used by McCaw/AT&T, have proven to very popular with cellular customers.

10 As I have indicated in my previous testimony before the Department,  
11 certain long distance companies are currently price-discriminating against  
12 cellular carriers and their customers.<sup>2</sup> Despite costs which are about 25-40%  
13 lower than their landline long distance costs, AT&T, MCI, and Sprint almost  
14 always charge the full undiscounted price for cellular long distance. Thus, these  
15 companies are price-discriminating against cellular customers. When AirTouch  
16 separated from Pacific Telesis last year and was no longer required to provide

---

17  
18  
19 <sup>1/</sup> In a previous affidavit to the FCC I determined that presubscription for  
20 interLATA toll should not be required for cellular. In that affidavit I  
21 calculated that required interLATA presubscription for BOC cellular  
22 customers cost consumers approximately \$900 million per year in higher long  
23 distance charges. See Affidavit of Jerry A. Hausman submitted to the FCC,  
24 "In the Matter of Equal Access and Interconnection Obligations Pertaining to  
25 Commercial Mobile Radio Services" (CC Docket No. 94-54), Sept. 7, 1994,  
26 attached here as Appendix A.

27  
28 <sup>2/</sup> See Affidavit of Jerry Hausman, submitted to the FCC on Sept. 7, 1994, op. cit.

1     presubscription for its interLATA long distance calls, it decreased interLATA  
2     long distance charges by about 40%. When a cellular company can buy long  
3     distance transmission in bulk, it is able to resell the service to its customers at a  
4     significantly lower price than the IXCs charge. Thus, given the anti-competitive  
5     behavior of the major IXCs with respect to cellular customers and the  
6     competition which currently exists for cellular, requiring intraLATA  
7     presubscription would likely harm consumers by leading to higher intraLATA  
8     long distance prices for cellular customers.

9             However, if intraLATA presubscription is required, not all intraLATA  
10     competitors should be required to contribute to the recovery of presubscription  
11     costs, as has been recommended in this case; c.f. Testimony of Michael J. Nelson  
12     for Sprint Communications Company, p. 17 of 24. Only carriers who participate  
13     as intraLATA toll competitors should contribute to the recovery of  
14     presubscription costs. If a provider is not providing intraLATA landline toll  
15     service, it should not be required to bear the costs of intraLATA presubscription.

16             Many cellular systems are designed to eliminate the concept of intraLATA  
17     toll calling. This is accomplished by engineering wide area calling scopes that do  
18     not require toll charges. These calling scopes often bear no relationship to the  
19     LATA and toll boundaries used by the RBOCs. This result is not surprising since  
20     the LATA boundaries were originally designed to provide a minimum number of  
21     landline customers such that an IXC, other than AT&T, could attract a sufficient  
22     number of customers to be competitive. The LATA boundaries had no association

1 with cellular telephone systems which had not even begun service in the United  
2 States at the time of the LATA boundary determinations. Therefore, cellular  
3 carriers who do not provide intraLATA toll service for their customers should not  
4 bear the costs of intraLATA toll presubscription. LATAs should only be used  
5 with respect to landline voice services; they should not be used with respect to  
6 mobile services or with respect to information services.

7  
8 III. Unbundling and Pricing of NYNEX's Network Elements

9 Consistent with H.R. 1555, the Department should require NYNEX to offer  
10 services, elements, features and functions of its network for resale at  
11 nondiscriminatory prices and at wholesale rates. The pricing for resale should  
12 recognize the costs avoided by NYNEX in not selling the retail service. For  
13 example, the provision of wholesale service by NYNEX should not require the  
14 incurrence of expenses for items such as billing, uncollectibles, service order  
15 processing, sales, product marketing and advertising. In general, usage sensitive  
16 pricing is to be preferred, except, for example, where an unbundled loop is being  
17 offered by a LEC as part of a flat rate plan, in which case the unbundled loop  
18 price should reflect the costs reasonably avoided by the wholesale sale.

1    IV.   Provision of Number Resources

2            NYNEX has proposed that it be allowed to recover the costs of  
3    administering the assignment of numbers under the North American Numbering  
4    Plan. Calabro Direct Testimony, p. 27.

5            In assigning new NXX codes to competitive carriers, NYNEX, or a neutral  
6    number administrator, if one is selected, should not charge those competitors for  
7    the switching-related costs of assigning the new codes. Instead, competing  
8    carriers should only be charged for the actual costs of administration related to  
9    the assignment of NXX codes.

10           The assignment of new NXX codes to any telecommunications provider  
11    creates costs for the entire telecommunications marketplace. Carriers must incur  
12    switch translation costs to update code and routing tables in their switches.  
13    Because these costs are widely distributed, no single entity, such as NYNEX,  
14    should be able to impose charges for these costs upon other competing carriers.  
15    Instead, all providers should absorb their switch translation costs as a cost of  
16    doing business. If NYNEX is to continue to assign NXX codes, or if a neutral  
17    number administrator takes on the responsibility for assigning new NXX codes,  
18    the administrator should be able to recover in a non-discriminatory manner from  
19    all carriers only the costs of administration for the number assignment, such as  
20    costs required to update the national number database.

21

1 V. Universal Service - Dr. Taylor's Analysis of Funding for Universal Service

2  
3 In responding to a question from the Department staff concerning universal  
4 service and the recovery of the contribution that is built into all of NYNEX's  
5 service prices, Dr. William E. Taylor, on behalf of NYNEX, proposed a  
6 mechanism for "taxing the essential facility" to recover that contribution.  
7 Transcript, Vol. 8, p. 140. He claims that his proposal to tax access would lead to  
8 smaller welfare losses for consumers than recovering the contribution through a  
9 neutral funding mechanism such as a universal service fund because "demand is  
10 the same, there's no welfare loss." Id.

11 However, Dr. Taylor ignores the fact that the tax on the essential facility  
12 (access) is included in the price of long distance toll calls where it typically  
13 comprises about 40-50% of the cost for landline long distance. Because long  
14 distance is among the most elastically demanded telecommunications services,  
15 the "tax on the essential facility" will lead to higher long distance prices and  
16 lower long distance demand.<sup>3</sup> In previous academic research I have estimated  
17 that the current federal access mechanism costs consumers over \$1 billion per  
18 year in lost consumer welfare. Additional welfare losses of approximately the  
19 same order of magnitude are created by state imposed taxes on access. Thus,

---

20  
21  
22 <sup>3/</sup> Thus, Dr. Taylor has considered only the direct demand for access and  
23 forgotten to take account of the derived demand for access which arises from  
24 demand for long distance services.

1 contrary to Dr. Taylor's testimony, taxes on access lead to very large consumer  
2 welfare losses.

3 My other area of disagreement with Dr. Taylor's universal service proposal  
4 is his assumption that no bypass competition exists for the essential facility. Id.,  
5 pp. 139-140. Bypass competition currently exists, and I expect it to increase  
6 greatly in the near future as companies such as MCI, Sprint, and AT&T as well  
7 as the CAPs expand their offerings. As I explained in my direct testimony, since  
8 access is an intermediate good, it should not be taxed under economically  
9 efficient tax and subsidy frameworks. Dr. Taylor's proposal will create  
10 unnecessary economic inefficiency in order to fund universal service.

11

12 This concludes my rebuttal testimony.



Affidavit of Professor Jerry A. Hausman

1. My name is Jerry A. Hausman. I am the MacDonald Professor of Economics at the Massachusetts Institute of Technology in Cambridge, Massachusetts, 02139.

2. I received an A.B. degree from Brown University and a B.Phil. and D. Phil. (Ph.D.) in Economics from Oxford University where I was a Marshall Scholar. My academic and research specialties are econometrics, the use of statistical models and techniques on economic data, and microeconomics, the study of consumer behavior and the behavior of firms. I teach a course in "Competition in Telecommunications" to graduate students in economics and business at MIT each year. Mobile telecommunications, including competitive and technological developments in cellular, ESMR, satellite, and PCS, are some of the primary topics covered in the course. I was a member of the editorial board of the Rand (formerly the Bell) Journal of Economics for the past 13 years. The Rand Journal is the leading economics journal of applied microeconomics and regulation. In December 1985, I received the John Bates Clark Award of the American Economic Association for the most "significant contributions to economics" by an economist under forty years of age. I have received numerous other academic and economic society awards. My curriculum vitae is attached.

3. I have done significant amounts of research in the telecommunications industry. My first experience in this area was in 1969 when I studied the Alaskan telephone system for the Army Corps of Engineers. Since that time, I have studied the demand for local measured service, the demand for intrastate toll service, consumer demands for new types of telecommunications